EXECUTIVE SUMMARY

River Gas Corporation (RGC) has notified the Bureau of Land Management (BLM), the Price River and San Rafael Resource Areas, of the company's intent to develop a coalbed methane (CBM) field in an area adjacent to the City of Price, Utah. RGC holds valid federal, state, and private oil and gas leases in the Project Area, which have created contractual and property rights for RGC from the United States, the State of Utah, and private mineral landowners, to develop the CBM gas resources. Within economic limits, the purpose of the RGC Proposed Action is to remove all recoverable CBM gas within the portion of the Project Area leased by RGC. RGC currently holds leases on approximately 123,000 acres within the 188,242-acre Project Area. Approximately 82,741 acres are federal surface (44 percent) within the Project Area, and an additional 12,721 acres (7 percent) are federal mineral ownership with state or private surface ownership.

Under the requirements of the National Environmental Policy Act (NEPA), BLM is required to analyze proposed actions involving federal lands and leases in terms of their potential impact on the human environment. This Final Environmental Impact Statement (FEIS) was prepared by Woodward-Clyde for the U.S. Department of the Interior, BLM, Moab District and Price office. The BLM, Utah State Director is the responsible official for the preparation of the EIS, and for issuing a final decision.

The BLM accepted public and agency comments on the proposed project during the public comment period (October 18, 1996 to December 2, 1996). Additionally, public hearings were held in Price and Castle Dale, Utah, on November 13 and 14, 1996, to receive comments on the adequacy and accuracy of the Draft EIS (DEIS). Comments
and issues brought forth during the review of the Draft EIS are addressed in the Final EIS.

The BLM will consider the Proposed Action and alternatives analyzed in the Final EIS and issue a decision on the project. The final decision and rationale will be presented in a document known as the Record of Decision (ROD). The BLM will either approve or deny future applications for facilities; permits to drill; and rights-of-way for field development of CBM by lessees with lease holds in the Project Area. The BLM's decisions will be based on conformance of the applications with the mitigation and development-exclusion areas specified in the ROD for the proposed development analyzed in this EIS. Mitigation and development-exclusion areas may be required in the ROD and future decisions on site-specific applications to minimize impacts to other resources and resource users, and to avoid unnecessary and undue degradation of the environment or violation of applicable laws and regulations. Additional site-specific reviews for NEPA compliance will be required for future applications and will be tiered to this EIS. The BLM ROD will apply to the portions of the Project Area that are federal surface or federal mineral estate. Federal mineral estate includes full-estate federal lands, or split-estate lands with federal subsurface and private or state-owned surface. Decisions by other jurisdictions to issue or not to issue approvals related to this proposal may be aided by the disclosure of impacts in this EIS. BLM may withhold final approval of Applications for Permit to Drill (APDs) and rights-of-way pending approval by the state, other federal agencies, and private landowners.

This summary of the Final EIS contains a description of the Proposed Action and alternatives, identifies the BLM's preferred



alternative; summarizes existing environmental conditions, analyzes various issues, and discloses the major impacts of the proposed project and the various alternatives upon the environment.

PROPOSED ACTION AND ALTERNATIVES

From 1991 to 1995, RGC developed 97 wells, 58 miles of transportation corridor, one compressor station, one injection well, and one evaporation pond; all within the Drunkards Wash Unit on state and private land. Ali wells and other facilities described for the Proposed Action and other alternatives are additional to these existing facilities.

**Project Description (Proposed Action)**

The Proposed Action would entail development of (1) approximately 601 wells, (2) approximately 350 miles of transportation corridors (access roads, pipelines, and utilities) and 51 miles of pipeline corridors, and (3) related facilities including 5 compressor stations, 7 injection wells, and 7 produced water evaporation ponds. These facilities would be developed over an estimated 10+-year period. About 60 percent of the wells would be located on federal land or federal mineral estate, and the remainder would be on lands owned by the Utah Division of Wildlife Resources, Utah Institutional and Trust Lands Administration, and private lands. Individual wells would remain operational for about 20 years, and would be plugged and abandoned at the end of the project. The total area affected over the life of the project on federal surface lands would be about 2,211 acres, and about 1,295 acres would be occupied by surface facilities, including wells, roads, injection wells, and evaporation ponds. An additional 208 acres of split-estate lands would be affected during construction, and 119 during operation. BLM restrictions on well development within 1/2 mile of an active raptor nest would affect 16 of the proposed wells. Areas closed to unauthorized vehicle use when big game are on their critical winter habitat would effect 189 wells and 115 miles of transportation corridors. RGC has proposed to develop 4 CBM wells per square mile (160-acre spacing), in accordance with the procedures and guidelines of the Utah Division of Oil, Gas and Mining (UDOGM) and the BLM. Well pads would be about 300 x 200 feet and would include a 50 x 50 foot drilling pit. Three classes of roads would be constructed or upgraded from existing roads: collector roads (travel width of 24 feet, design speed 25 mph); local roads (travel width of 20 feet, design speed of 20 mph), and resource roads (travel width of 16 feet, design speed of 15 mph). Four types of pipelines would be constructed, including 2-to 18-inch diameter gas gathering and produced water pipelines, and high pressure 12-inch diameter delivery and interconnect pipelines. Electrical lines would be installed underground.

RGC determined final well depths would be about 1,400 to 3,800 feet deep, and would be completed in the Ferron Sandstone. (Based on UGS data [UGS 1995b], well depths may be 1,000 to 4,500 feet deep.) Vertical air drilling techniques would be used unless special conditions require drilling mud. Two to six drill rigs would be operational during the drilling period (April 15 to December 15). An average of 4 days would be required for drilling each well. Each well would be cased with 8 5/8-inch to 9 5/8-inch surface casing to a depth of 300 feet, and 5 1/2-inch to 7-inch production casing to total well depth. The entire length of casing would then be cemented into place. Well completion would



take 7 to 14 days and would include perforating the well's steel casing, hydraulically fracturing the producing formation, and installing a series of valves and fittings on the wellhead ("Christmas tree").

Installed surface production facilities would include the Christmas tree, a walking beam pumping unit, separation facility, gas metering facility, and connections to the gas and water collection systems. Each well would be visited about once every 3 days to ensure that the equipment is operating properly. A central computer based monitoring system would also be used to monitor wellsite operating conditions.

Each compressor station would occupy about 5 acres, and would utilize 6 to 17 1,700 HP compressor units, electrical or gas-fired with clean-burn control technology. Produced water would be disposed of in injection

wells (about 8 acres each) and evaporation ponds (about 4 acres each). Produced water would have roughly 6,500 to 9,000 parts per million total dissolved solids. The injection wells would be completed into the Navajo, Entrada, Wingate, and Curtis formations, and are anticipated to take at least 10,000 barrels of water per day. Evaporation ponds would be approximately 400 x 400 feet and 9 feet deep. They would employ an active spray process to enhance evaporation to an annualized daily minimum of 5,000 barrels of water per day, and would be constructed with liners and leak detection systems.

At the end of the economic life of each well (estimated to be 20 years), final reclamation and abandonment procedures would include removal of all surface equipment, reclaiming and seeding of wellsites and access roads, and abandonment of pipelines in place.
Construction, operation and abandonment activities would be conducted in compliance with federal, state, and local laws and regulations. In addition, various environmental protection measures would be applied, but would vary by land ownership. They include measures developed by RGC and applicable to all lands; by BLM for lands under federal surface and mineral ownership; by Utah Division of Wildlife Resources for lands under its control, and by the State of Utah for State Institutional and Trust Lands. For private lands, Utah Division of Oil, Gas and Mining, BLM guidelines and RGC standard operating procedures require that RGC attempt to negotiate a surface use agreement with the landowner prior to construction. County conditional use permits would be required for all wells' in Emery County, and for wells in zoned residential areas and areas above 7,000 foot elevation in Carbon County.

**Issues**

Public issues and comments regarding the Price CBM Project were solicited for incorporation into this EIS through a scoping process, including public scoping and agency project review. A public scoping meeting was held in Price, Utah, on September 8, 1994, and an agency scoping meeting on September 15, 1994. The Public Scoping Summary Report was prepared and submitted to the public on January 30, 1995. The summary report identified preliminary land and resource management issues, concerns, and opportunities, and outlined timing needs for public involvement. Issues raised during scoping, through the NEPA process, and agency and public comments on the DEIS are addressed by alternative in Chapters 3 and 4 of the FEIS and include:



Geology: protection of coal reserves

Water resources: produced water withdrawal and disposal, freshwater needs, effects of runoff on surface water bodies

Air quality: effect of emissions from construction and operation, visibility/ haze, dust, cumulative effects
Recreation: loss or degradation of dispersed recreation facilities/ opportunities including trails, effects on hunting

- Visual resources: effects on scenic quality

- Noise: increased noise during construction and operation

Soils: effects on highly erodible soils and highly saline soils

Vegetation: loss of vegetation especially pinyon-juniper and riparian, noxious weeds, reclamation

· Wetlands: loss of wetlands

Socioeconomics/quality of life: increased traffic, jobs, loss of tourism income, effects on tax base

Health and safety: use of hazardous materials, geologic hazards, fires and explosions, and public and worker safety

Wildlife: direct and indirect effects on mule deer, elk, black bear, mountain lion, sage grouse, prairie dogs, raptors, waterfowl

Special status species: Effects on bald eagle, Colorado River fish and other listed species, effects on spotted bat, burrowing owls and other sensitive species

Several additional issues were raised during scoping, but not analyzed in detail by alternative. Analysis of these issues found that impacts would be negligible or the same for all alternatives. These issues are discussed in Chapter 1.

**Summary Description of Alternatives**

**Alternative** A - 80-Acre Well Spacing

Cultural resources: direct and indirect effects on archaeological sites, effects on sites of Native American religious or cultural significance

Land use: conformity with existing federal, state, and local plans, land use compatibility, !and jurisdiction, effects to agriculture, effects to roads

Livestock management: reduction of livestock carrying capacity, effects on livestock management, effects on facilities The future performance of wells may indicate that closer spacing of wells is required for optimal recovery of CBM gas. To address this possibility, Alternative A includes an 80-acre well spacing (8 per square mile). With Alternative A, 1,103 CBM wells would be drilled, completed, and produced within the same Project Area and time period. Project activities would be the same as for the Proposed Action, but the number of wells and miles of transportation corridor would increase by 83 and 48 percent, respectively.



**Alternative B - Critical Areas Avoidance**

The critical areas avoidance alternative was developed to reduce potential impacts to mule deer and elk critical winter habitat. Under this alternative there would be no development on federal surface or mineral estate within the combined area of critical winter range. Project activities would be the same as for the Proposed Action outside of these areas, and on non-federal surface or minerals.

There are two subalternatives for Alternative B, based on well spacing. For Alternative BI, (160-acre spacing), there would a 28 percent decrease in the number of wells, and a 48 percent decrease in the number of miles of transportation corridor, compared to the Proposed Action. In addition, 2 injection wells and evaporation ponds located within critical winter range would be eliminated. With Alternative B2 (80-acre spacing), there would be a 25 percent decrease in the number of production wells and a 30 percent decrease

in the number of miles of transportation corridor, compared to Alternative A.

**Alternative C - Security. Areas Protection**

The security areas protection alternative was also developed to reduce potential impacts to mule deer and elk critical winter habitat. Under this alternative there would be no development on federal surface or mineral estate on important concentration areas for mule deer and elk within their winter range. There would similarly be no development within security areas located on lands controlled by the Utah Division of Wildlife Resources. These areas would serve as secure habitat where big game would be protected from disturbance and stress associated with CBM field development, and all CBM surface activity would be prohibited. Outside these areas, project activities would be the same as described for the Proposed Action and Alternative A.

There are two subalternatives for Alternative C, based on well spacing. For Alternative C1, (160-acre spacing), there would an 8 percent decrease in the number of wells, and a 12 percent decrease in the number of miles of transportation corridor, compared to the Proposed Action. With Alternative C2 (80-acre spacing), there would also be an 8 percent decrease in the number of production wells and an 8 percent decrease in the number of miles of transportation corridor, compared to Alternative A.

**Alternative D - Big Game Minimum Disturbance Corridors (BLM Preferred Alternative)**

Alternative D was developed through a collaborative effort between RGC and BLM in consultation with UDWR and UDOGM to address public concern for the protection and management of the Gordon Creek Wildlife Management Area for wintering big game. This alternative provides for protection of approximately 75% of the Gordon Creek Wildlife Management Area, including all of the UDWR lands, from CBM development impacts. Big game corridors were established that include key drainages and canyon rims within big game critical winter range. Wells and roads within the corridors would be relocated where appropriate to minimize impacts inside the corridors.

Alternative D would have a 9 percent decrease in the number of wells and an 11 percent decrease in the miles of transportation corridors, compared to the Proposed Action. The number of compressor sites, injection wells and evaporation ponds would be reduced by one.



**No Action**

Denial of well development on federal mineral estate would preclude activity on much of the federal lands within the Project Area. However, development on state and private lands would likely occur, and for analysis purposes was assumed to be the same as the Proposed Action on non-federal lands. Access across federal surface to reach proposed well locations on state and private lands would likely be granted by the BLM. The number of wells would be reduced by 62 percent, and the number of transportation corridor miles by 56 percent compared to the Proposed Action. In addition, the number of injection wells and evaporation ponds would be reduced by 3 each.

Agency Preferred Alternative

In accordance with NEPA, Federal agencies are required by the Council on Environmental Quality regulations (40 CFR 1502.14) to identify their preferred alternative in the Draft ElS. The preferred alternative is not a final agency decision; but rather an indication of the agency's preliminary preference. This preference has been changed in the Final EIS based on additional information developed from comments on the Draft EIS.

The BLM preferred alternative for the Price CBM Project is Alternative D - Big Game Minimum Disturbance Corridors. This alternative utilizes 160-acre spacing.

**AFFECTED** ENVIRONMENT

Chapter 3 of the Final ElS describes environmental, economic and social conditions as they currently exist within the study area. Following is a brief summary of this affected environment.



The Project Area covers approximately 294 square miles (188,000 acres). It includes the communities of Price, Wellington, Carbonville and Spring Glen, and extends south to about 2 miles north of Cleveland, and four miles north of Huntington. The town of Elmo, located in Emery County, is partially within the southeast corner of the Project Area. It is bounded on the west by the Wasatch Plateau, and on the north by the Book Cliffs.

The Project Area is located within the Mancos Shale Lowlands Section of the Colorado Plateau, and Maneos Shale covers nearly the entire area. The landscape of the western portion of the study area is characterized by sloping, gravel-covered pediments and narrow, flat-bottomed alluvial valleys. The eastern portion of the Project Area is relatively flat, with some lower benches. Elevation in the Project Area ranges from about 5,400 to 7,800 feet. Coal is not currently mined within the Project Area, but some coals of the Ferron Sandstone may be mineable. There are four coal fields located nearby -Book Cliffs, Wasatch Plateau, Emery, and Northern Emery.

The majority of the Project Area is within the watershed of the Price River, which is the largest river in the area. Other perennial streams are located mainly in the western half of the Project Area, and include Gordon Creek and several of its tributaries, Miller Creek, and Cedar Creek. There are approximately 90 springs and seeps, also mainly in the western half. The water quality of streams generally degrades as it goes from the Wasatch Plateau and Book Cliffs into the lowlands, because of the highly saline nature of the Maneos Shale. Six groundwater aquifers are present including the Quaternary alluvium along major streams, the Ferron Sandstone Member of the Maneos, and the Curtis Formation,



Navajo-Nugget, and Entrada Sandstone. The Ferron Sandstone is not currently used as an aquifer within or adjacent to the Project Area, and total dissolved solids (TDS) concentrations range from 6,500 to 9,500 mg/L. The Curtis, Entrada and Navajo-Nugget are also not currently used as aquifers in or near the Project Area. The Navajo-Nugget is an important aquifer elsewhere, but is deep and has poor water quality in the Project Area.

The climate east of the Wasatch Mountains is generally characterized by hot, dry summers, and cold, dry winters. The area is subject to prolonged inversions, which occur in both winter and summer. The Project Area is characterized by strong northwest winds and experiences diurnal flow during calm periods. The Project Area is classified as a Class II area under Prevention of Significant Deterioration (PSD) regulations, and is in attainment with all state and federal standards. The existing visual range is excellent.

About 38 percent of the Project Area has a high to severe potential for water erosion, and about 35 percent

of the area is currently undergoing accelerated erosion due to high intensity storms, broken irrigation canals, and irrigation ranoff. Most of the rest of the Project Area is rated moderate for water erosion. None of the soils in the Project Area have a high potential for wind erosion, but about half have a moderate potential. About 4 percent of the soils are rated very high for salinity, and about 39 percent are rated as moderately to highly saline. Seven percent of the Project Area is unsuitable as a source of reclamation material because there is little or no soil material available, and 39 percent is poor because of very high salinity and/or existing gullying. Most of the areas of poor suitability are located in the eastern half of the Project Area.
The eastern half of the Project Area has salt desert vegetation in uncultivated areas, with large patches of irrigated agricultural lands, several urbanized areas, and areas of riparian and wetland vegetation. The western half is mostly sagebrush-grass on loamy soils and more level sites, with pinyon-juniper on steeper slopes and on shallow or rocky soils. Small areas of montane and subalpine forest, mountain shrub and barren land occur along the western and northern boundaries of the Project Area, at the edge of the Wasatch Plateau and Book Cliffs. Several State or County-designated noxious weeds occur within the study area. Much of the Project Area has significant limitations for reestablishment of disturbed vegetation.

Wetlands potentially under the jurisdiction of Section 404 of the Clean Water Act are present mainly near agricultural areas in the eastern half of the Project Area, and are related to irrigation practices. Smaller natural wetlands occur along perennial streams and at springs and seeps.

Much of the western half of the Project Area consists of critical and high value mule deer and elk winter habitat. High value yearlong habitat for pronghorn antelope is present east of Highway 10. Black bear high value yearlong habitat and moose limited value winter habitat occur in the northwestern comer of the Project Area. The Gordon Creek Wildlife Management Area occupies about 23,000 acres in the northwestern portion of the Project Area, and is managed mainly for deer, elk, and moose. At least 8 raptor species regularly occur and nest within the Project Area, with golden eagle the most common. Historic sage grouse habitat is present on some of the benches. Nearly 7,000 acres of white-tailed prairie dog towns are present.



The only listed endangered or threatened species known to occur in the Project Area are bald eagle (wintering), and peregrine falcon (nesting). Sensitive species include northern goshawk, ferruginous hawk, western burrowing owl, loggerhead shrike, spotted bat, and two plant species. Several endangered, threatened or sensitive fish species are also present in the Colorado River, downstream of the Project Area.

Areas assessed as having a high sensitivity for cultural resources occupy 46 percent of the Project Area, and include corridors along streams above 6,000 feet elevation, springs, historic coal mining areas, and areas of intensive agricultural development in historic times. Moderate sensitivity areas occupy about 44 percent, and include all uplands above 6,000 feet, marginal agricultural lands, and areas of low-production coal mining. Low sensitivity areas include salt desert areas and steep slopes.

The Project Area lies within southern Carbon County and northern Emery County. Two incorporated towns are present, Price and Wellington, along with the unincorporated communities of Spring Glen, Carbonville and Elmo, and dispersed residential areas. Existing land uses include rural communities; mineral exploration and production facilities; transportation and utility corridors; agriculture; grazing; wildlife habitat, and dispersed recreation. Major highways include State Routes 10 and 122, and U.S. 6; there is an extensive network of county roads, BLM roads, and roads recently constructed by RGC for development of CBM wells. In general, traffic volumes are low because of the sparse population.

The BLM manages 27 grazing allotments completely or partially within the Project Area. About 6 to 35 acres are required to
produce an animal unit month (AUM), depending on plant production. Cattle and sheep are the primary livestock types. Season of use varies by allotment, and includes all seasons. About half of the public lands are rated as being the mid-seral (fair) condition.

Dispersed recreational activities on public lands within the Project Area include hunting, fishing, hiking, jogging, mountain biking and wildlife viewing. Developed recreational areas include community parks, three shooting ranges, one golf course, and the Carbon County Fairgrounds. The Carbon County Trails Plan includes several existing and planned trails within the Project Area. Most of these trails are located along existing roads and trails.

Most of the federal lands within the Project Area are mapped by BLM as Visual Resource Management (VRM) Class IV, which allows for major modifications to the existing landscape. Class III areas occur along the natural escarpments and ridgelines that surround the Price River Valley, and require that changes be visually subordinate to the existing landscape. Areas considered to be sensitive to visual change include communities, rural residential areas, areas of concentrated or dispersed recreation, and transportation corridors.

Because of the low population density, ambient noise levels are estimated to range from 35 to 40 decibels in most areas. Noise levels in more populated or industrialized areas would be higher.

The economies of Carbon and Emery Counties have experienced considerable swings over the past 15 years, mainly related to changes in the coal mining industry and energy markets. Mining currently comprises 26 percent of employment in Emery County,



and 12 percent in Carbon County. State and local revenues from existing CBM developments include state mineral lease royalty payments, state and local share of federal royalty payments, severance tax, conservation tax, ad valorem tax, and sales and use taxes, and totaled over $3.5 million dollars in 1995. the water needs for any of the alternatives would require a change from current municipal, industrial or agricultural usage. The estimated annual consumption of freshwater during construction would represent 0.06 to 0.1 percent of Carbon County's 1995 water needs.

Air Quality-

ENVIRONMENTAL CONSEQUENCES

The Proposed Action and alternatives were evaluated for their potential impacts on various environmental, social and cultural resources. Issues analyzed by alternative are addressed in detail in Chapter 4. Some issues had similar impacts for all alternatives and are addressed in Chapter 1. A brief summary of impacts is provided below. In general, the different alternatives all have the same kinds of impacts but the magnitude of impacts varies according to the number of wells and other facilities.

**Geoloev**

Construction related activities would cause moderate, short-term, and localized increases in particulate emissions (fugitive dust), but would not result in the violation of any air quality standards. Operation of the compressor stations would cause an increase in NO2 and CO concentrations in the Project Area, but would

not cause an exceedance of the ambient air quality standards. The maximum ground level concentrations would be approximately 67 percent for the Class II areas and 2 percent for the Class I areas. A visible haze may be observable in Price a few days per year.

Recovery of gas reserves would range between 452 billion cubic feet for the No Action to 1,717 billion cubic feet for Alternative A. No adverse impacts are expected for geology.

Water **Resources**

All of the alternatives would involve some minor short-term impacts to surface water quality as a result of surface disturbances during construction. Longer-term erosion and salt loading for all alternatives are expected to be within levels observed for existing conditions. Water from the Ferron Sandstone would be relocated, evaporated and/or mixed with poorer quality water as a result of injection under all the alternatives. The purchasing or leasing of water rights to meet

**Soils**

All alternatives would involve disturbance of highly erodible soils, highly saline soils, and areas with material unsuitable for reclamation. Soil loss from erosion would range from 607 to 36,441 tons/year, depending on the alternative and the extent of bare ground, mulched revegetation areas, and successful revegetation. Salt delivery to regional water systems from disturbance and erosion of saline soils would range from 7 to 255 tons/year, again depending on the alternative and ground conditions. Materials unsuitable for reclamation are present in some portions of the Project Area, and an alternate source of cover soil material would be necessary to reclaim 76 to 207 acres. Salt drift from the evaporation ponds is not likely to have significant adverse effects.



**Vegetation**

All of the alternatives would involve removal or disturbance of large areas of vegetation; impacts would be scattered around the Project Area, and would range from about 1 percent of the Project Area for the No Action, to 3.1 percent for Alternative A. The Project Area would remain predominantly in natural vegetation. Impacts to pinyon-juniper woodlands would range from 171 to 658 acres and would be long-term. Most loss and disturbance of riparian vegetation would be avoided during facility siting. Revegetation would be difficult in some areas, and would require monitoring and retreatment of failures. Some spread of noxious weeds may occur, but control is required by law and committed to by RGC.

**Wetlands**

All of the alternatives have the potential to adversely affect wetland areas and functions by filling, excavating, clearing and grading, and drainage. Impacts are expected to be low to moderate, because of required permitting and environmental protection measures. The area of potential affect is highest for Alternatives A, B2 and C2, and lowest for the No Action. Most impacts would be avoided during facility siting.

Wildlife

Disturbance and displacement of mule deer and elk on critical and high value winter ranges would have significant impacts for all alternatives. All alternatives are expected to result in regional reductions in winter

range carrying capacity and populations, ranging from 8 to 23 percent for mule deer in the North Manti herd unit, and 6 to 11 percent of elk in the Manti herd unit. Corresponding reductions in population goals set by Utah



Division of Wildlife Resources would be 1,200 to 3,220 deer, and 660 to 1,210 elk. Mountain lion would be largely displaced from the Project Area, except where the alternatives provide secure habitat. The project is not expected to adversely affect regional populations of black bear, moose or pronghorn antelope. It would not directly impact sage grouse, but would reduce the potential for re-establishment. Raptors may experience increased stress and disturbance, and 4 to 14 nests would be located within 1/2 mile of facilities. The evaporation ponds would provide new surface water habitat for migratory birds, and their water quality is not expected to be harmful. Impacts to other upland game, songbirds, reptiles, and amphibians would be proportional to the area of disturbance, ranging from 0.6 to 1.9 percent for the different alternatives. The highest impacts would generally occur from Alternative A. Alternatives B1, B2, C1, C2, D, and No Action would avoid development in specific areas of high importance to big game and other wildlife.

**Special Status Species**

This EIS serves as a Biological Assessment as part of BLM's compliance with Section 7 of the Endangered Species Act. Thirteen species of federally listed threatened or endangered plant or animal species occur within Carbon and Emery Counties. Bald eagle and peregrine falcon occur in the Project Area, and four Colorado River fish species occur downstream in the Price and Colorado Rivers. The project is not likely to adversely affect these species. Impacts to sensitive species are expected to be low to negligible on federal land and low to moderate on other lands. Species potentially affected include loggerhead shrike, burrowing owl, ferruginous hawk, and sensitive plants.



**Cultural Resources**

Direct disturbance or destruction of significant sites could occur under all alternatives. The Project would affect from 998 to 2,109 acres of high sensitivity, and 678 to 1,985 acres of medium sensitivity. Private collection and vandalism could also occur under all alternatives. The area affected would range from 5 to 11.9 percent of the high sensitivity areas, and 2.3 to 11.7 percent of the medium sensitivity areas. Sites of Native American religious or cultural significance may have direct or indirect disturbance. The area affected would range from 3.7 to 11.8 percent of the Project Area.

Land **Use**

All of the alternatives would be in conformance with plans and policies for State Trust Lands, but all except Alternative D would be inconsistent with management objectives for the Gordon Creek Wildlife Management Area. Alternative D would minimize negative effects to the wildlife management area. Compliance with goals and objectives of the Carbon and Emery Counties General Plans would vary, but generally the project would be consistent with many of the economic and business development goals, and not consistent with goals concerning maintenance of rural, scenic, and recreational qualities. Several trails listed in the Carbon County Trails Plan would be impacted by the Price CBM project, and other existing and planned CBM developments. Impacts to incorporated towns would be avoided, but impacts would occur to rural dispersed residences from noise, visual, dust and traffic. Moderate increases in traffic would occur on highways and local roads, and there would be increased maintenance costs. Long-term losses of agricultural land would occur, and would range from 109 to 193 acres for the various alternatives. Impacts would be highest for !and use under Alternatives A, B2 and C2 (the 80-acre

spacing alternatives), and lowest under the No Action alternative, based on the amounts of facilities and the acres affected.

**Livestock Management**

A loss of grazing capacity would occur on federal allotments, from removal of vegetation during construction, and placement of operational facilities. Loss of AUMs would range from 64 to 270 for construction, and 33 to 170 for operation. Any actual change in the grazing preference would be evaluated on a case-by-case basis. Increased traffic may result in greater livestock accidents and harassment, and would be proportional to traffic increases associated with the alternatives.

**Recreation**

CBM facilities would be placed on public lands west of Price, and would result in a loss of quality for dispersed recreational activities including hiking, jogging, horseback riding, mountain biking, hunting, and use of planned county trails. Exclusion areas for protection of wildlife in Alternatives B1 and B2 would reduce impacts compared to the Proposed Action and Alternative A. Alternatives C1, C2, and D would have smaller reductions in impacts. Under the No Action alternative, public lands west of Price would retain most of the current recreational values.

**Visual Resources**

All of the alternatives, including the No Action alternative, would substantially change the visual quality of portions of the Project Area, and result in significant visual impacts to rural residences, to public lands used for recreation and to local travel routes. These



types of changes are consistent with the BLM's Visual Resource Management objectives for Class IV landscapes, but changes to Class III lands may exceed the level of acceptable visual change when located in foreground/middleground distance zones. Private rural residential lands and recreational areas, estimated as Class II or III, may be significantly affected by reduced qualities in rural natural settings, including 907 to 1,836 acres of foreground distance zones. Impacts would be greater for Alternatives A, B2 and C2 because of the increased density of facilities.

**Noise**
Alternatives A and C2, and lowest for the No Action alternative.

Health and Safety

There is a small potential for leaks, rupture, fire, and explosions from gas flowlines, and a negligible potential for human-caused wildfire ignitions. Methane gas seepage, blowouts, hydrogen sulfide releases, and earthquakes are unlikely to occur with the Proposed Action or any of the alternatives. Health and safety risks associated with well field construction and operation would be similar to those associated with heavy construction and industry, and there would be minimal risks to public safety.

Noise impacts from construction and operation activities would depend on the distance between the noise source and the receptor. Receptor locations greater than about 500 feet from the noise source would not be adversely affected. The increased numbers of facilities under Alternatives A, B2 and C2 would have a

greater potential for adverse effect.

**Socioeconomics**
CUMULATIVE IMPACTS

Compliance with NEPA requires that impact analysis consider the cumulative effects of the Proposed Action and each of the alternatives collectively with the impacts of ongoing, other proposed, and potential projects and activities. Ongoing and reasonably foreseeable future actions analyzed for cumulative impacts (together with the alternatives) include the following:

There would be an increase in employment from the project, with up to 96 to 385 jobs created, depending on the alternative and the stage of development. A seasonal influx due to transient construction Workers would occur, but little or no increase in demand for temporary housing or for community facilities and services would occur. There would be a substantial net benefit to state and local government from payment of taxes and royalties. The project would have an adverse effect on citizens who value outdoor recreation, but a beneficial impact on those receiving higher wage employment and economic opportunity. Both positive and negative impacts would be highest for 0'

Five ongoing CBM exploration and development projects located near the Project Area

- One proposed CBM project, overlapping with the Project Area

Potential additional drilling within the Price CBM Project Area (additional to the alternatives evaluated in Chapter 4). The total number of wells would range from 285 for the additional drilling with the No Action alternative, to 1,100 wells with Alternative A.



- Potential CBM development of the Ferron Fairway

and fugitive dust would have localized effects but cumulative effects are not anticipated.

- Potential north-south interconnect gas pipeline

- Proposed and potential coal mines

- New subdivisions near Price

Significant cumulative effects to regional soils are unlikely, because of erosion control and revegetation requirements, and because impacts would be dispersed over a large area and affect only about three percent of the total area.

- Future logging

- Water diversions associated with the Gooseberry Narrows Dam

Cumulative effects were evaluated for water resources, air quality, soils, wildlife, recreation, visual resources, and socioeconomics.
There would be significant cumulative impacts to mule deer populations and winter habitat in the North Manti herd unit, and to elk populations and winter habitat in the Manti herd unit. Together with impacts to other herd units from other projects, there may be significant reductions in regional big game populations, habitat carrying capacity, and hunting opportunities.

Cumulative impacts for water resources could potentially include the loss of flow from springs where the Ferron Sandstone is exposed; significant short-term surface water quality degradation due to CBM construction activities, and potentially reduced surface water flow volumes associated with the proposed Gooseberry Narrows dam project.

The cumulative analysis for air quality included the proposed Hiawatha co-generation project and the existing major sources of criteria air pollutants in the region. Cumulative impacts would not exceed air quality standards. Prior to construction, RGC would be required to obtain an Approval Order from the Utah Division of Air Quality (UDAQ). The UDAQ Review would include criteria air pollutants, hazardous air pollutants, and fugitive dust control plans. Emissions of nitrogen oxides from the compressor stations would contribute to regional haze and reductions in visibility. However, current visibility is excellent and the visual range exceeds 125 miles. Construction emissions
Cumulative developments in open space would reduce the availability and quality of dispersed recreational activities in the region.

Cumulative impacts to visual resources would be significant, and would include transformation of existing natural landscapes to a semi-industrial character in foreground and middleground distance zones of residential areas, roadways, and areas of dispersed recreation.

The projects evaluated together with the RGC Project would likely have a significant positive impact on employment and tax revenues. However, depending on timing of the various projects, a boom-bust cycle may occur. The quality of life would be degraded for those who strongly value outdoor recreation or existing scenic quality, but may be improved for those directly or indirectly employed by the developments.